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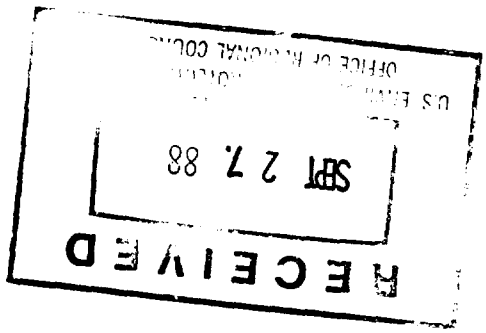
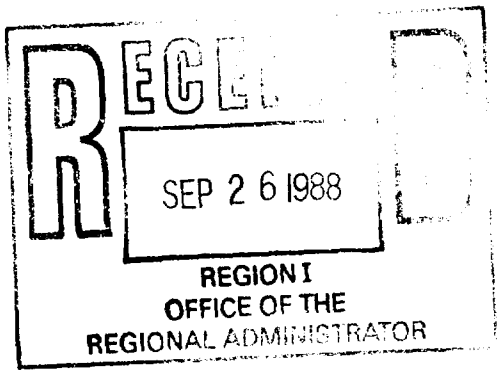


Site: NEW BEDFORD
Date: 11/12/11

AVX Corporation
80 Cutter Mill Road
Great Neck, NY 11021
516-829-8500

AVX

Charles A. Dill
President



September 22, 1988

Mr. Merrill Hohman
Director - Waste Management
New England Region
U.S. Environmental Protection Agency
John F. Kennedy Federal Building
Boston, Massachusetts 02203-2211

Dear Mr. Hohman:

In response to your letter of September 14, 1988, I have attached copies of summary charts extracted from a more complete presentation, which we would like to review and discuss with the EPA on October 5. These attached charts outline the core elements of the remediation plan we have developed.

We will be prepared on October 5 to review with you the analysis of the problem and evaluation of options we undertook with our consultants to arrive at the remediation alternative we are proposing. We understand and expect that the EPA, together with your consultants, may have different technical conclusions or priorities, and the purpose of this first meeting is to determine whether there is a reasonable prospect, through further exchanges and meetings at the technical level, of agreeing on a common remediation approach, around which we can both then concentrate our further analysis and resources.

To get this process started, we feel a direct discussion is a more practical and timely approach. We recognize that direct discussion of the technical issues may represent a departure from the previous approach of communicating through legal channels, with strict adherence to the development of a documented administrative record. Although there may be some legal risks for both the EPA and ourselves with this change in approach, the potential for moving ahead with direct technical discussion appears to be high enough to warrant at least an initial meeting on October 5.

I would like to hold the October 5 date if at all possible, because of the logistic difficulty of finding convenient meeting dates for all the involved parties.

Sincerely,

Charles A. Dill

CAD/sn
cc: Paul Keough

A REMEDIAL ACTION PLAN
NEW BEDFORD HARBOR SUPERFUND SITE

OCTOBER 5, 1988

PRESENTATION OVERVIEW

1. BACKGROUND

   - PCB PROBLEM
   - REMEDIAL ALTERNATIVES UNDER CONSIDERATION
   - ASSESSMENT

2. ENVIRONMENTAL SETTING

3. REMEDIAL ACTION CONCEPT

   - IMPACT OF CAPPING ON PCB FLUX RATES

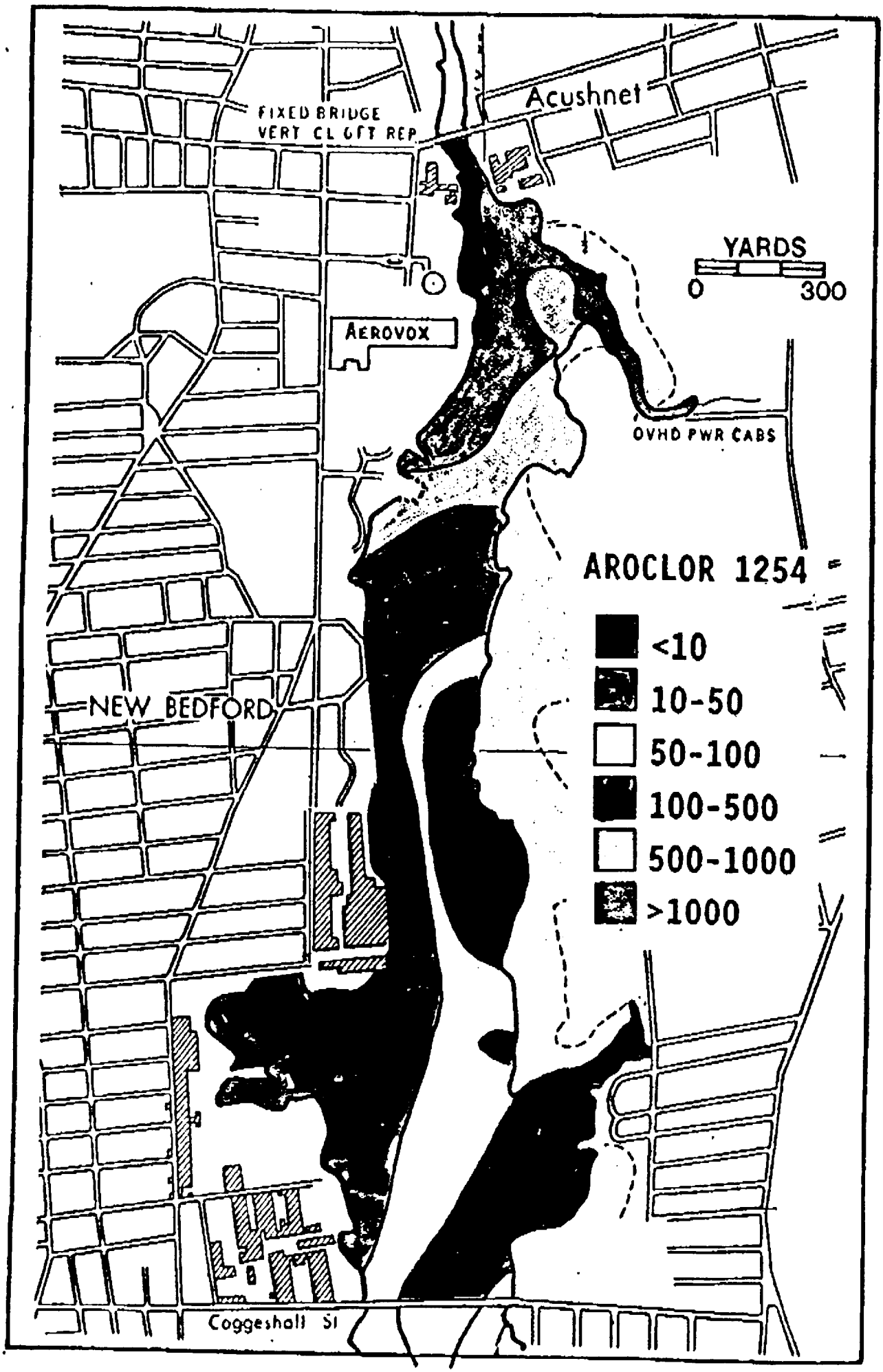
   - CAPPING CONCEPT
     - OVERVIEW
     - ENGINEERING FEASIBILITY
     - CONSTRUCTION METHODOLOGY
     - ENVIRONMENTAL IMPACT
     - COST ESTIMATES

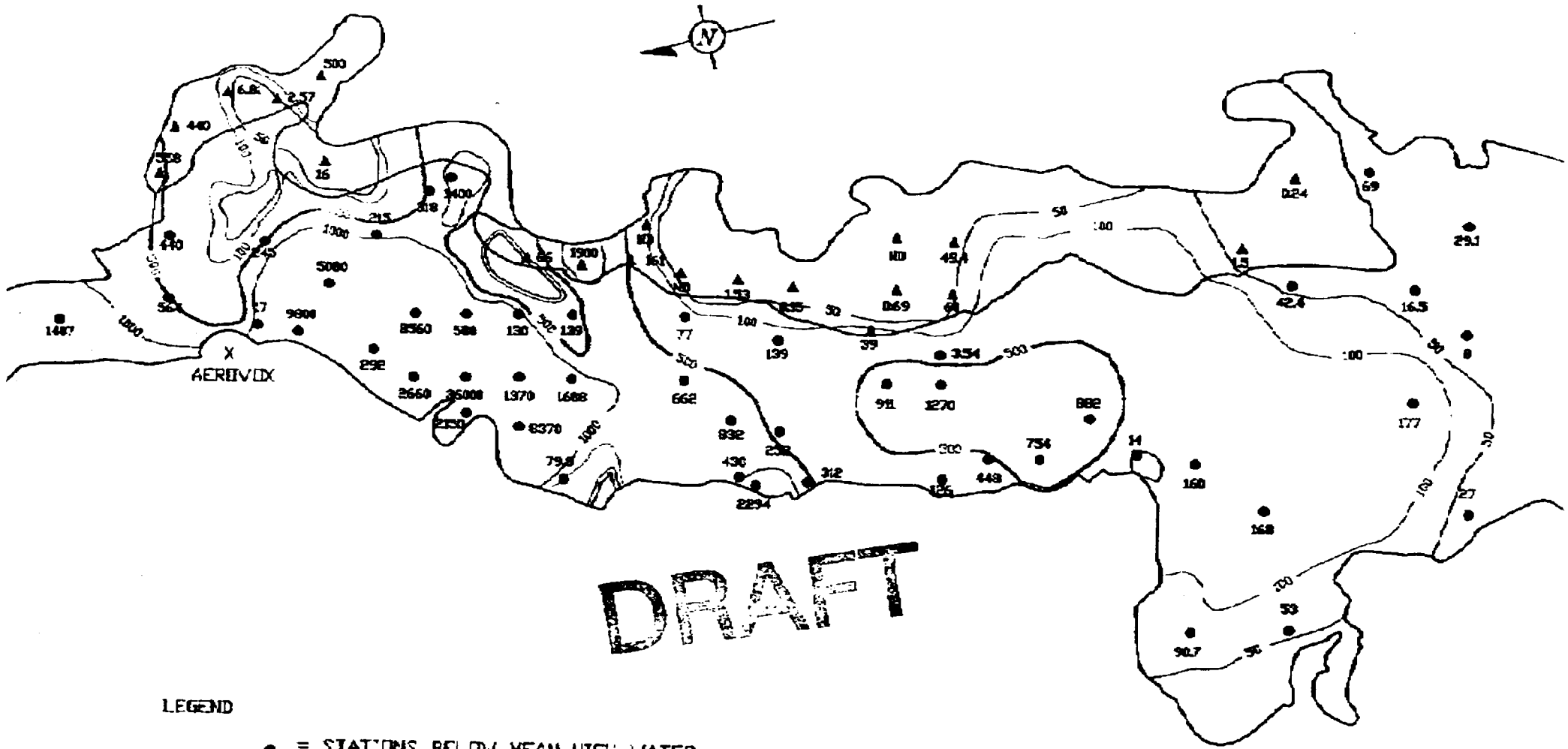
4. SUMMARY ASSESSMENT OF PROPOSED REMEDIAL ACTION PLAN

5. CONCLUSION

HISTORY OF PCB PROBLEM IN NEW BEDFORD HARBOR

1976-1979	PCB CONTAMINATION DOCUMENTED IN NEW BEDFORD HARBOR BY EPA AND ACADEMIC SCIENTISTS, MASSACHUSETTS CLOSES ESTUARY TO FISHING
1981	NEW BEDFORD HARBOR NAMED BY EPA TO NATIONAL PRIORITIES LIST OF HAZARDOUS WASTE SITES (SUPERFUND SITE)
1983	NUS WORK PLAN-REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
1984	NUS FAST TRACK FEASIBILITY STUDY (FS) UPPER ESTUARY
1985-88	US ARMY CORPS ENGINEERING FEASIBILITY STUDY EVALUATE CAD AND CDF APPROACHES
1987	EBASCO DETAILED ANALYSIS OF REMEDIAL TECHNOLOGIES FOR NEW BEDFORD
1987-	US ARMY CORPS/EPA PILOT STUDY - DREDGING AND DISPOSAL ALTERNATIVES


FIXED BRIDGE
VERT CL 6FT REP
Acushnet
YARDS
0
300
AEROVOX
OVHD PWR CABS
AROCLOR 1254
<10
10-50
50-100
100-500
500-1000
>1000
NEW BEDFORD
Coggeshall St



LEGEND

● = STATIONS BELOW MEAN HIGH WATER

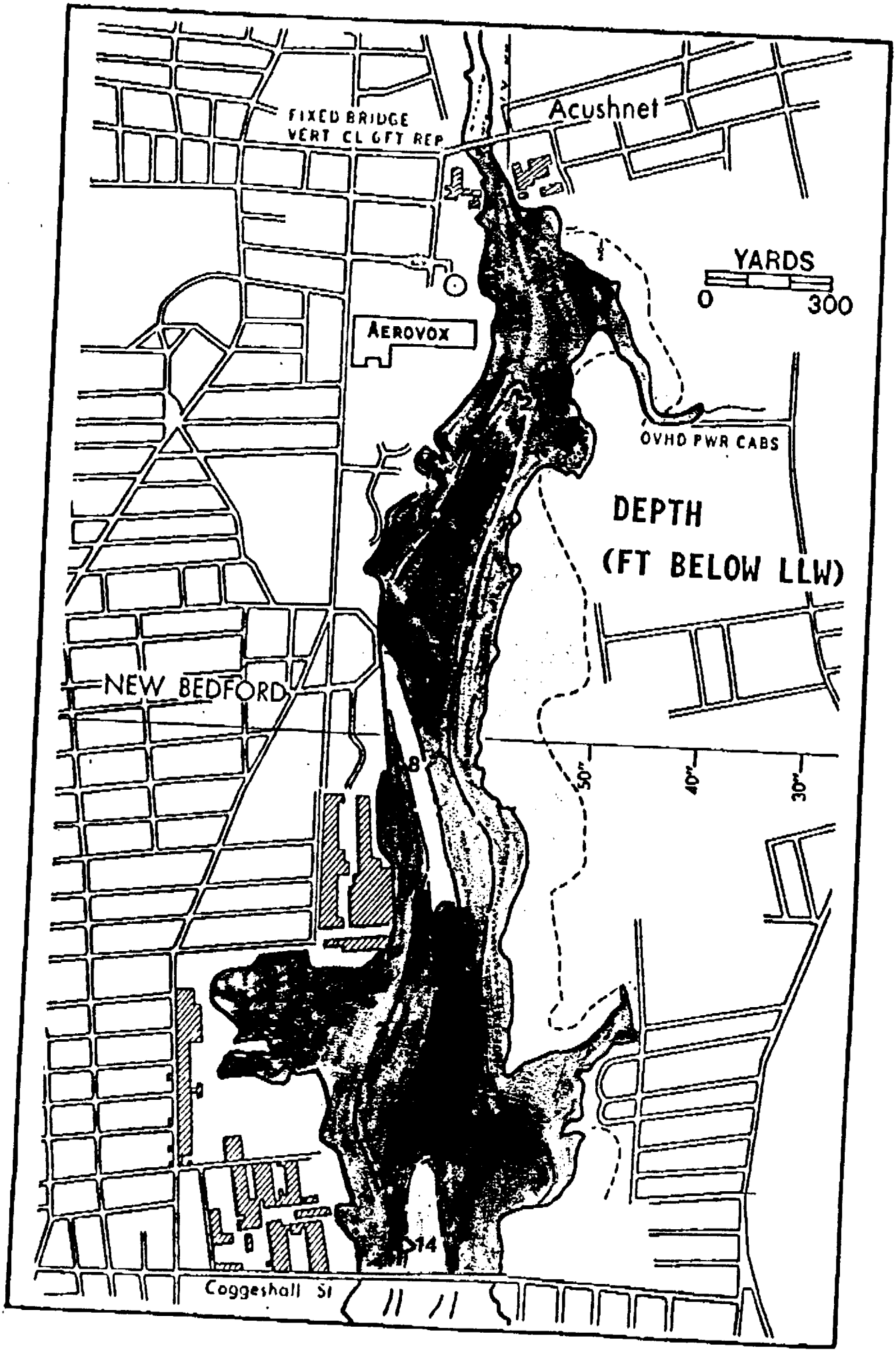
▲ = STATIONS ABOVE MEAN HIGH WATER

NOTES:

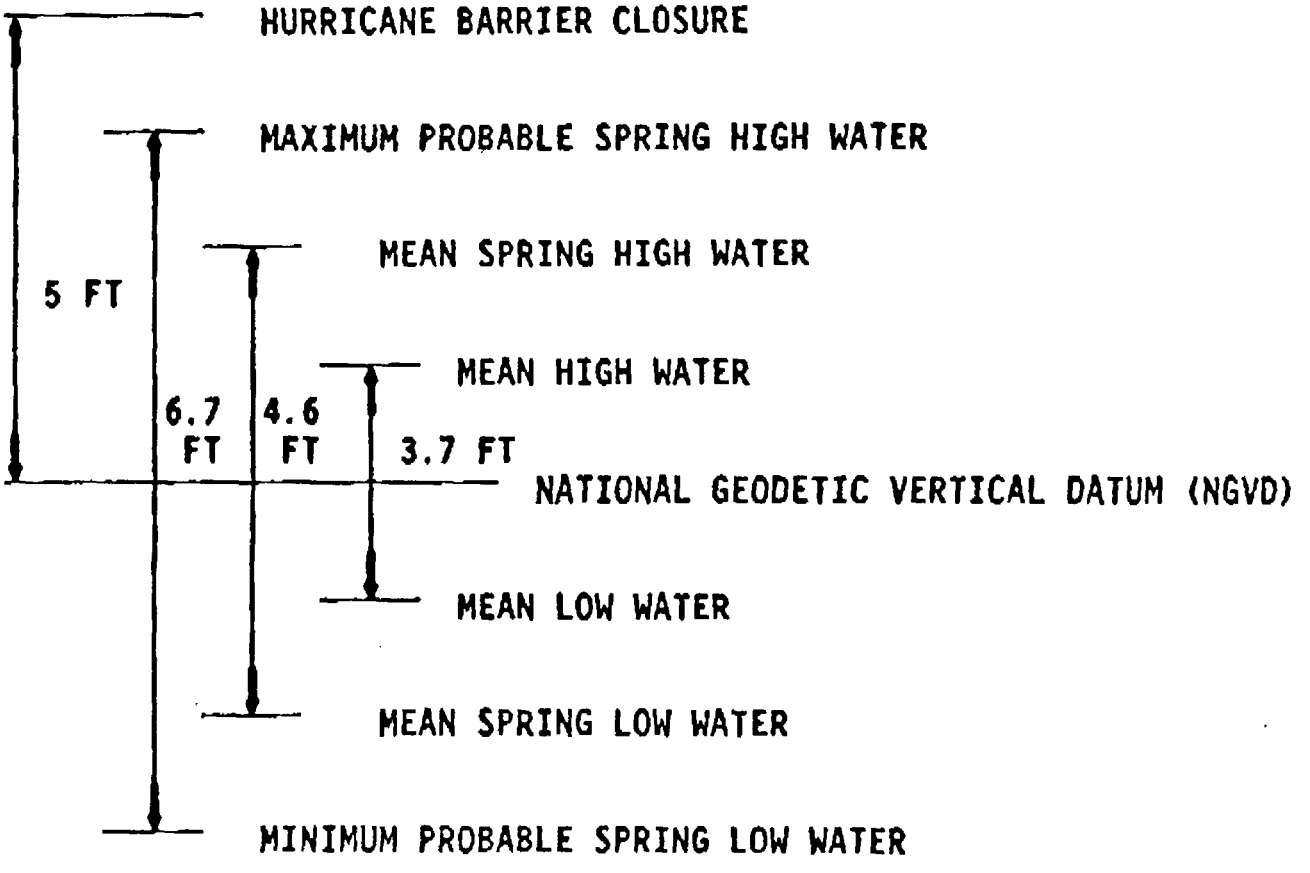
1) UNITED STATES ARMY CORPS OF ENGINEERS (AUGUST-OCTOBER, 1985) AND BATTELLE/NUS (JUNE, 1985) DATA PRESENTED

2) PCB CONCENTRATIONS SHOWN ARE IN MG/KG DRY WEIGHT OR PPM

TITLE
PCB CONCENTRATIONS
0 - 12 INCH INTERVAL
UPPER ESTUARY SEDIMENTS


FIXED BRIDGE
VERT CL 6FT REP
Acushnet
YARDS
0
300
AEROVOX
OVHD PWR CABS
DEPTH
(FT BELOW LLW)
NEW BEDFORD
8
50'
40'
30'
14
Coggeshall St

TIDAL ELEVATIONS NEW BEDFORD, MASSACHUSETTS



ENVIRONMENTAL CHARACTERISTICS OF NEW BEDFORD HARBOR AND ACUSHNET RIVER ESTUARY

PHYSICAL ENVIRONMENT

	ENTIRE HARBOR	COGGESHALL ST. BRIDGE
SURFACE AREA (MLW)	3.86 X 10^6 M^2	7.8 X 10^5 M^2
AVERAGE DEPTH (MLW)	3.01 M	0.92 M
VOLUME (MLW)	1.16 X 10^7 M^3	7.2 X 10^5 M^2
TIDAL PRISM	4.35 X 10^6 M^3	8.8 X 10^5 M^3
FLUSHING TIMES	2 DAYS	1 DAY
DRAINAGE BASIN	47.6 KM^2 (18.4 MI^2)	
RIVER FLOW RATES		
MEAN ANNUAL	0.85 M^3/S (30 CFS)	
LOW FLOW	0.008 M^3/S (0.3 CFS)	
STORM PEAKS		
100 YR	38.2 M^3/S (1350 CFS)	
50 YR	22.7 M^3/S (800 CFS)	
25 YR	20.5 M^3/S (723 CFS)	
5 HR AVG, 100 YR	18.4 M^3/S (650 CFS)	

WINDS

AVG SPEED 4.8 M/S NW - WINTER, SW - SUMMER
FASTEST MILE, 40.3 M/S, HURRICANE (AUGUST)

ENVIRONMENTAL CHARACTERISTICS OF NEW BEDFORD HARBOR AND ACUSHNET RIVER ESTUARY (CONT.)

TIDES	AMPLITUDE (FEET)	(M)
MEAN TIDE RANGE	3.7	1.13
MEAN HIGH WATER (ABOVE NGVD)	2.4	0.73
MEAN LOW WATER (BELOW NGVD)	1.3	0.4
MEAN SPRING TIDE RANGE	4.6	1.4
MEAN SPRING HIGH WATER (ABOVE NGVD)	2.9	0.88
MAXIMUM PROBABLE SPRING HIGH WATER (ABOVE NGVD)	4.2	1.3
MINIMUM PROBABLE SPRING LOW WATER (BELOW NGVD)	2.5	0.76
STORM SURGE		
MAXIMUM OBSERVED (21 SEPT 1938 HURRICANE)	12.5	3.8
MAXIMUM HEIGHTS; WITH HURRICANE BARRIER	5.0	1.5

CURRENTS

TIDAL SEMI DIURNAL		
TYPICAL SPEEDS	5-20 CM/S	(0.1-0.4 KTS)
NARROW RESTRICTIONS	51-102 CM/S	(1-2 KTS)
CURRENTS AND SURFACE ELEVATION	3 HRS PHASE DIFFERENCE	

SALINITY RANGE

UPPER ESTUARY	10-30°/oo
HARBOR	27-32°/oo

PHYSICAL

- SMALL URBAN ESTUARY
- LOW FRESHWATER INPUT
- PRIMARILY TIDAL CIRCULATION
- HURRICANE BARRIER ISOLATES ESTUARY FROM OFFSHORE WATERS (STORM SURGES)

GEOLOGICAL

- DEPOSITIONAL ENVIRONMENT
- COMPLEX TIDAL FLATS, SHALLOW BASINS AND TIDAL CHANNELS; SIGNIFICANT HUMAN ALTERATIONS - DREDGING FILLING
- ORGANIC-RICH SILTS/CLAYS IN UPPER ESTUARY TO COARSER SANDS/GRAVELS IN LOWER ESTUARY
- NET SEDIMENT TRANSPORT INTO HARBOR FROM BUZZARDS BAY

BIOLOGICAL

- ESTUARINE
- EUTROPHIC
- HIGH POLLUTANT LOAD
- SUBTIDAL: MUD BOTTOM, HIGH TURBIDITY, PLANKTON-BASED FOOD CHAIN
- INTERTIDAL: MUD FLATS AND SALT MARSH; SALT MARSH IS 80% HIGH MARSH CONTAINING SPARTINA PATENS (SALT MEADOW CORDGRASS)

CRITERIA FOR REMEDIAL ACTION PLAN*

- EFFECTIVENESS
  - RELIABILITY
  - SIGNIFICANTLY AND PERMANENTLY REDUCE TOXICITY, MOBILITY, AND VOLUME

- IMPLEMENTATION
  - TECHNICAL, INSTITUTIONAL, ADMINISTRATIVE FEASIBILITY TO INSTALL, MONITOR AND MAINTAIN TECHNOLOGY

- COSTS
  - DIRECT - INDIRECT COSTS
  - OPERATION AND MAINTENANCE COSTS

*IN ACCORDANCE WITH

CERCLA FEASIBILITY (CERCLA-FS)
NATIONAL CONTINGENCY PLAN (NCP)
SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA)

REMEDIAL ACTION PLAN SUMMARY
INLET MODIFICATION - CAPPING

- CONSTRUCT TEMPORARY DAM (WITH VARIABLE HEIGHT WEIR) AT COGGESHALL ST. BRIDGE

  - WEIR AT MHW - CONTROL CIRCULATION AND WATER LEVEL DURING CAPPING

  - WEIR AT MLW - TIDAL UPPER ESTUARY, SALINITY RANGE TYPICAL PRESENT, TIDAL RANGE AND FLOW REDUCED BY 65%

- CAP UPPER ESTUARY SEDIMENTS

  CAP UPPER ESTUARY, OBTAIN CLEAN MATERIAL FROM OFFSHORE OR LAND BORROW PIT
  GEOFABRIC COVER
  GRAVEL-STONE EROSION PROTECTION
  (18 ACRES, HOT SPOT AND VICINITY)
  CAPPING DEPTH - 45 CM

ADVANTAGES OF CAPPING APPROACH

- WIDELY USED PRACTICE
- SUCCESSFULLY IMPLEMENTED (ROTTERDAM; 1981; SEATTLE, 1984; NEW YORK EXP MUD DUMP, 1983; LONG ISLAND SOUND, 1980'S)
- EFFECTIVELY ISOLATE WASTE
- COST EFFECTIVE
- TECHNOLOGY AND EQUIPMENT READILY AVAILABLE
- NO HAZARDOUS MATERIAL IS HANDLED, RISK OF RELEASE MINIMAL
- COVER MATERIAL ABUNDANT AND FREE (OFFSHORE BORROW SITE)

GENERAL STEPS IN CAPPING UPPER ESTUARY

- CONSTRUCT TEMPORARY DAM WITH GATES/WEIR
- USE GATES FOR CIRCULATION CONTROL
- ACCOMMODATE ADDITIONAL DREDGED MATERIAL IF DESIRED
- CAP UPPER ESTUARY WITH SAND FROM OFFSHORE BORROW PIT. PLACE USING SUBSURFACE DIFFUSER
- PLACE GEOFABRIC IN NORTHERN PART OF UPPER ESTUARY
- PLACE STONE-GRAVEL PROTECTIVE CAP
- VEGETATE NEW INTERTIDAL MARSH AREAS
- MONITOR CAP INTEGRITY, VALIDATE CAP PERFORMANCE
- REMOVE TEMPORARY DAM

CAPPING PROCEDURE, UPPER ESTUARY

- HYDRAULICALLY PUMP CAP MATERIAL AND PLACE USING SUBMERGED DIFFUSER. START AT NORTHERN-MOST END AND WORK SOUTH

- USE DAM/WEIR SYSTEM TO CONTROL WATER LEVEL AND CIRCULATION IN REGION

  - DAM CLOSED AT MHW GIVES ADDED WATER DEPTH
  - ELIMINATES TIDAL CURRENTS (HELPS SEDIMENT CONSOLIDATION)

- CLOSE DAM AT MLW, LAY GEOFABRIC NORTHERN UPPER ESTUARY

- USE BARGE MOUNTED CRANE AND SCOW TO PLACE GRAVEL PROTECTIVE CAP. DAM CLOSURE AT MHW GIVES ADDED WATER DEPTH FOR OPERATION

- DAM CLOSED TO AID IN CAP CONSOLIDATION

- REMOVE DAM/WEIR AFTER CAP PERFORMANCE VERIFIED

CAPPING OPERATION

- BORROW SITE IN BUZZARDS BAY, CLEAN MATERIAL, SAND OR SAND/GRAVEL
- LARGE HOPPER DREDGE (LOAD CAPACITY 10,000 CU YD): DREDGE AND TRANSPORT MATERIAL TO NEW BEDFORD HARBOR (LOWER OR MIDDLE)
- HYDRAULICALLY PUMP CAP MATERIAL THROUGH PIPELINE TO DISCHARGE BARGE
- PLACE CAP MATERIAL WITH SUBMERGED DIFFUSER

ATTRACTIVE FEATURES OF ASA REMEDIAL ACTION PLAN

- AREA REMAINS ESSENTIALLY AS IS (SALT MARSH)
- PCB BURIED IN PLACE, LITTLE CHANCE OF RELEASE TO ENVIRONMENT
- MINIMAL LONG-TERM DISTURBANCE TO AREA
- PLAN IS SIMPLE IN CONCEPT, NO OPERATIONAL OR MAINTENANCE COSTS
- TECHNOLOGY WELL KNOWN, EASILY IMPLEMENTED
- SERVES AS A PERMANENT REMEDIATION
- LONG-TERM ENVIRONMENTAL IMPACT MINIMAL
- AFFORDABLE

SUMMARY OF ASSESSMENT FOR ASA REMEDIAL ACTION PLAN

PARAMETERS	ASSESSMENT
DREDGING	NONE IN UPPER ESTUARY, FOR CAPPING FROM OFFSHORE
CAPPING	45 CM (35 CM FOR CHEMICAL BARRIER, 10 CM TO PREVENT BIOTURBATION), COARSE GRAVEL-STONE PROTECTIVE CAP (18 ACRES) FOR FLOOD EROSION CONTROL
SYSTEM MAINTENANCE	NONE
HYDRAULIC/FLOOD CONTROL	HURRICANE BARRIER PROTECTS AGAINST STORM SURGE, ACCEPTABLE FOR RIVER FLOODING WITH PROTECTIVE CAP
DECREASE IN PCB MIGRATION	SIGNIFICANT (>85%)
ENVIRONMENTAL IMPACT	WITH CAP, CREATE 30 ACRES SALT MARSH

SUMMARY OF ASSESSMENT FOR ASA REMEDIAL ACTION PLAN (CONT.)

ECOSYSTEM EFFECTS	MINOR, TEMPORARY WATER QUALITY PROBLEM DUE TO DAM/WEIR CONTROL
MITIGATION	CREATE NEW MARSH (30 ACRES, WITH CAP)
POLITICAL	REMAIN SALT MARSH ENVIRONMENT, LEAVE POLLUTANT WHERE IT IS, SIMPLE SOLUTION, QUICKLY EXECUTED
REGULATORY ACCEPTABILITY	PROBABLY ACCEPTABLE
COST (MILLIONS)	RANGE: $15 - 30